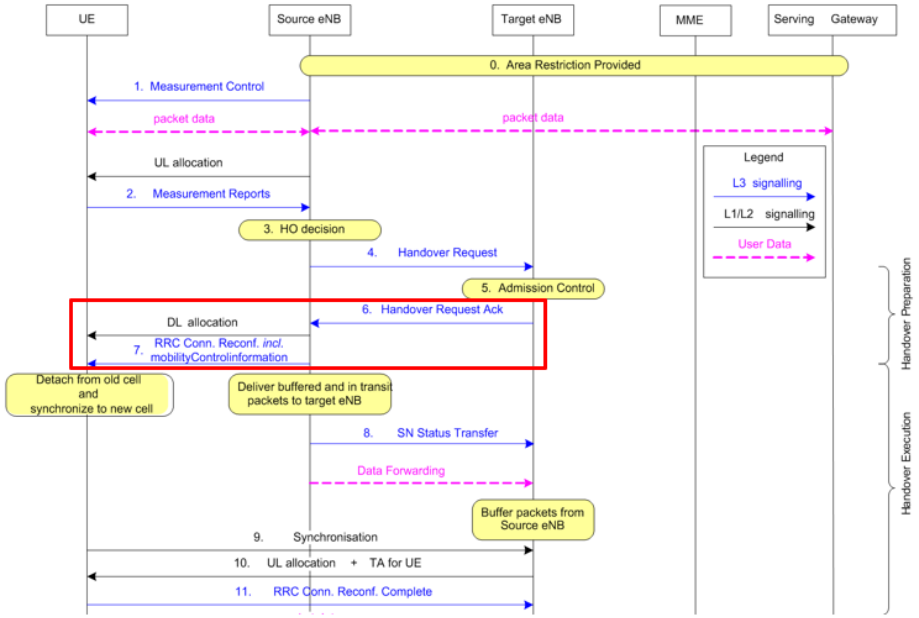
Exhibit A

Exhibit A – U.S. Patent No. 8,259,688

Toyota makes, uses, tests, offers for sale, sells, and/or imports vehicles that comply, operate in accordance, and/or are configured in accordance with 36 Series of one or more of 3GPP releases 8-16. Such vehicles are collectively referred to as the "Accused Products." The Accused Products include Toyota and Lexus-branded vehicles that support LTE and that were made in, used in, tested in, offered for sale in, sold in, or imported into the United States by Toyota at some point in time since 2018. Each of the Accused Products supports LTE and, thus, includes the features and functionality identified in this chart. The features and functionality identified in this chart cause the Accused Products to practice the asserted claims of U.S. Patent No. 8,259,688 (the "'688 patent").

Claim 1	Accused Products
[PRE] A method for use in a mobile station, the method comprising:	An Accused Product is a mobile station. As evidenced below, the Accused Products perform the claimed method when operating on an LTE network.
[A][1] receiving, by the mobile station from a serving base station, an indication of a first subset of random access identifier codes randomly selectable by the mobile station for contention based transmission on a random access channel of a target base station and	As evidenced below, an Accused Product operating on an LTE network receives, from a serving base station, an indication of a first subset of random access identifier codes randomly selectable by the mobile station for contention based transmission on a random access channel of a target base station.

Claim 1	Accused Products
	 **Source:** TS 36.300,[1] p. 45

[1] 3GPP TS 36.300 V8.12.0 (2010-03), Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN) Overall description, Stage 2 (Release 8)

Claim 1	Accused Products
	6 Target eNB prepares HO with L1/L2 and sends the HANDOVER REQUEST ACKNOWLEDGE to the source eNB. The HANDOVER REQUEST ACKNOWLEDGE message includes a transparent container to be sent to the UE as an RRC message to perform the handover. The container includes a new C-RNTI, target eNB security algorithm identifiers for the selected security algorithms, may include a dedicated RACH preamble, and possibly some other parameters i.e. access parameters, SIBs, etc. The HANDOVER REQUEST ACKNOWLEDGE message may also include RNL/TNL information for the forwarding tunnels, if necessary. NOTE: As soon as the source eNB receives the HANDOVER REQUEST ACKNOWLEDGE, or as soon as the transmission of the handover command is initiated in the downlink, data forwarding may be initiated. Steps 7 to 16 provide means to avoid data loss during HO and are further detailed in 10.1.2.1.2 and 10.1.2.3. 7 The target eNB generates the RRC message to perform the handover, i.e *RRCConnectionReconfiguration* message including the *mobilityControlInformation*, to be sent by the source eNB towards the UE. The source eNB performs the necessary integrity protection and ciphering of the message. The UE receives the *RRCConnectionReconfiguration* message with necessary parameters (i.e. new C-RNTI, target eNB security algorithm identifiers, and optionally dedicated RACH preamble, target eNB SIBs, etc.) and is commanded by the source eNB to perform the HO. The UE does not need to delay the handover execution for delivering the HARQ/ARQ responses to source eNB. **Source:** TS 36.300, p. 46

Claim 1	Accused Products

– *MobilityControlInfo*

The IE *MobilityControlInfo* includes parameters relevant for network controlled mobility to/within E-UTRA.

***MobilityControlInfo* information element**

```
-- ASN1START

MobilityControlInfo ::=     SEQUENCE {
    targetPhysCellId                    PhysCellId,
    carrierFreq                         CarrierFreqEUTRA                OPTIONAL,   -- Cond HO-
toEUTRA
    carrierBandwidth                    CarrierBandwidthEUTRA           OPTIONAL,   -- Cond HO-
toEUTRA
    additionalSpectrumEmission          AdditionalSpectrumEmission      OPTIONAL,   -- Cond HO-
toEUTRA
    t304                                ENUMERATED {
                                            ms50, ms100, ms150, ms200, ms500, ms1000,
                                            ms2000, spare1},
    newUE-Identity                      C-RNTI,
    radioResourceConfigCommon           RadioResourceConfigCommon,
    rach-ConfigDedicated                RACH-ConfigDedicated            OPTIONAL,   -- Need OP
    ...
}

CarrierBandwidthEUTRA ::=           SEQUENCE {
    dl-Bandwidth                        ENUMERATED {
                                                n6, n15, n25, n50, n75, n100, spare10,
                                                spare9, spare8, spare7, spare6, spare5,
                                                spare4, spare3, spare2, spare1},
    ul-Bandwidth                        ENUMERATED {
                                                n6, n15, n25, n50, n75, n100, spare10,
                                                spare9, spare8, spare7, spare6, spare5,
                                                spare4, spare3, spare2, spare1} OPTIONAL -- Need OP
}

CarrierFreqEUTRA ::=                SEQUENCE {
    dl-CarrierFreq                      ARFCN-ValueEUTRA,
    ul-CarrierFreq                      ARFCN-ValueEUTRA            OPTIONAL    -- Cond FDD
}

-- ASN1STOP
```

Source: TS 36.331,[2] p. 145

[2] 3GPP TS 36.331 V8.21.0 (2014-06), Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification; (Release 8)

Claim 1	Accused Products

– *RadioResourceConfigCommon*

The IE *RadioResourceConfigCommonSIB* and IE *RadioResourceConfigCommon* are used to specify common radio resource configurations in the system information and in the mobility control information, respectively, e.g., the random access parameters and the static physical layer parameters.

***RadioResourceConfigCommon* information element**

```
-- ASN1START

RadioResourceConfigCommonSIB ::=    SEQUENCE {
    rach-ConfigCommon                   RACH-ConfigCommon,
    bcch-Config                         BCCH-Config,
    pcch-Config                         PCCH-Config,
    prach-Config                        PRACH-ConfigSIB,
    pdsch-ConfigCommon                  PDSCH-ConfigCommon,
    pusch-ConfigCommon                  PUSCH-ConfigCommon,
    pucch-ConfigCommon                  PUCCH-ConfigCommon,
    soundingRS-UL-ConfigCommon          SoundingRS-UL-ConfigCommon,
    uplinkPowerControlCommon            UplinkPowerControlCommon,
    ul-CyclicPrefixLength               UL-CyclicPrefixLength,
    ...
}
```

Source: TS 36.331, p. 128

– *RACH-ConfigCommon*

The IE *RACH-ConfigCommon* is used to specify the generic random access parameters.

***RACH-ConfigCommon* information element**

```
-- ASN1START

RACH-ConfigCommon ::=       SEQUENCE {
    preambleInfo                        SEQUENCE {
        numberOfRA-Preambles                ENUMERATED {
                                                n4, n8, n12, n16 ,n20, n24, n28,
                                                n32, n36, n40, n44, n48, n52, n56,
                                                n60, n64},
```

[…]

RACH-ConfigCommon field descriptions
numberOfRA-Preambles
Number of non-dedicated random access preambles in TS 36.321 [6]. Value is an integer. Value n4 corresponds to 4, n8 corresponds to 8 and so on.

Source: TS 36.331, pp. 126-127

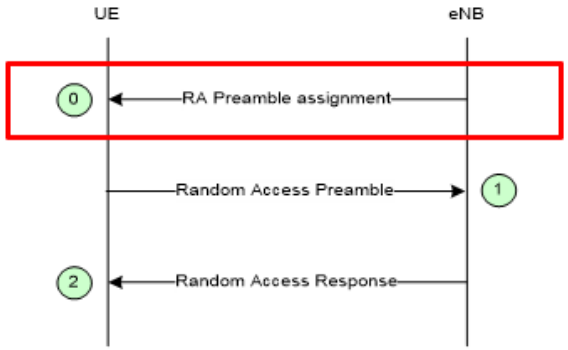
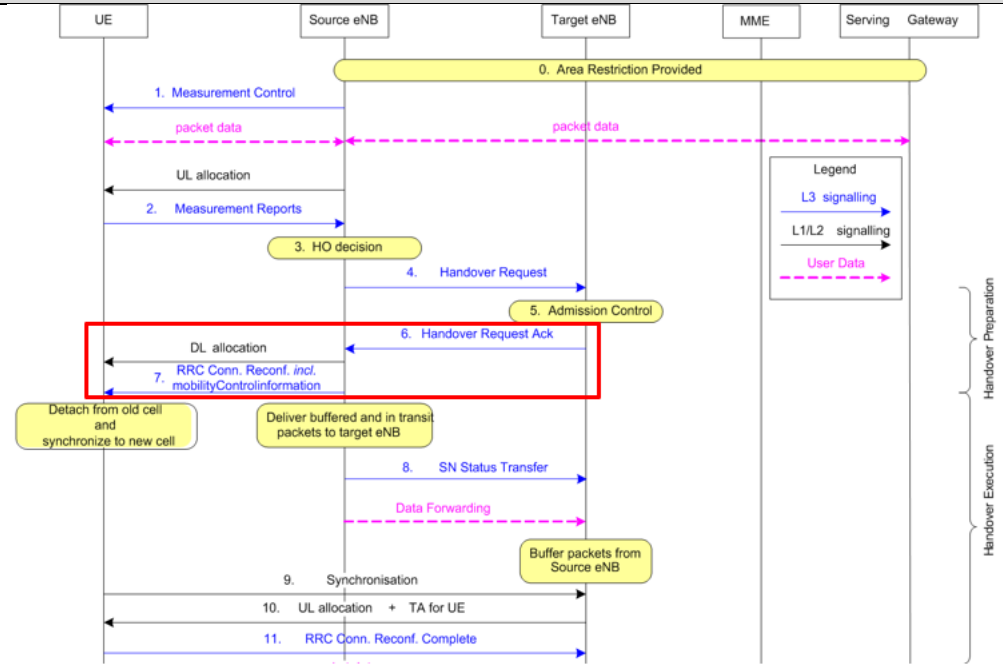
Claim 1	Accused Products
[A][2] [receiving, by the mobile station from a serving base station] … an indication of an allocated random access identifier code for non-contention based transmission on the random access channel of the target base station and not available for random selection by the mobile station for contention based transmission on the random access channel of the target base station,	As evidenced below, an Accused Product operating on an LTE network receives, from a serving base station, an indication of an allocated random access identifier code for non-contention based transmission on the random access channel of the target base station and not available for random selection by the mobile station for contention based transmission on the random access channel of the target base station. 10.1.5.2 Non-contention based random access procedure The non-contention based random access procedure is outlined on Figure 10.1.5.2-1 below:  **Figure 10.1.5.2-1: Non-contention based Random Access Procedure** **Source**: 36.300, p. 54

Exhibit A – U.S. Patent No. 8,259,688

Claim 1	Accused Products
	The three steps of the non-contention based random access procedures are: 0) Random Access Preamble assignment via dedicated signalling in DL: - eNB assigns to UE a non-contention Random Access Preamble (a Random Access Preamble not within the set broadcasted on BCH). - Signalled via: - HO command generated by target eNB and sent via source eNB for handover; - PDCCH in case of DL data arrival. 1) Random Access Preamble on RACH in uplink: - UE transmits the assigned non-contention Random Access Preamble. 2) Random Access Response on DL-SCH: - Semi-synchronous (within a flexible window of which the size is one or more TTI) with message 1; - No HARQ; - Addressed to RA-RNTI on PDCCH; - Conveys at least: - Timing Alignment information and initial UL grant for handover; - Timing Alignment information for DL data arrival; - RA-preamble identifier. - Intended for one or multiple UEs in one DL-SCH message. **Source**: 36.300, p. 54

Exhibit A – U.S. Patent No. 8,259,688

Claim 1	Accused Products
	 **Source**: 36.300, p. 45

Claim 1	Accused Products
	6 Target eNB prepares HO with L1/L2 and sends the HANDOVER REQUEST ACKNOWLEDGE to the source eNB. The HANDOVER REQUEST ACKNOWLEDGE message includes a transparent container to be sent to the UE as an RRC message to perform the handover. The container includes a new C-RNTI, target eNB security algorithm identifiers for the selected security algorithms, may include a dedicated RACH preamble, and possibly some other parameters i.e. access parameters, SIBs, etc. The HANDOVER REQUEST ACKNOWLEDGE message may also include RNL/TNL information for the forwarding tunnels, if necessary. NOTE: As soon as the source eNB receives the HANDOVER REQUEST ACKNOWLEDGE, or as soon as the transmission of the handover command is initiated in the downlink, data forwarding may be initiated. Steps 7 to 16 provide means to avoid data loss during HO and are further detailed in 10.1.2.1.2 and 10.1.2.3. 7 The target eNB generates the RRC message to perform the handover, i.e *RRCConnectionReconfiguration* message including the *mobilityControlInformation*, to be sent by the source eNB towards the UE. The source eNB performs the necessary integrity protection and ciphering of the message. The UE receives the *RRCConnectionReconfiguration* message with necessary parameters (i.e. new C-RNTI, target eNB security algorithm identifiers, and optionally dedicated RACH preamble, target eNB SIBs, etc.) and is commanded by the source eNB to perform the HO. The UE does not need to delay the handover execution for delivering the HARQ/ARQ responses to source eNB. **Source:** TS 36.300, p. 46

Claim 1	Accused Products

	– *MobilityControlInfo*
	
	The IE *MobilityControlInfo* includes parameters relevant for network controlled mobility to/within E-UTRA.
	
	***MobilityControlInfo* information element**
	
	`-- ASN1START`
	
	`MobilityControlInfo ::= SEQUENCE {`
	`  targetPhysCellId PhysCellId,`
	`  carrierFreq CarrierFreqEUTRA OPTIONAL, -- Cond HO-toEUTRA`
	`  carrierBandwidth CarrierBandwidthEUTRA OPTIONAL, -- Cond HO-toEUTRA`
	`  additionalSpectrumEmission AdditionalSpectrumEmission OPTIONAL, -- Cond HO-toEUTRA`
	`  t304 ENUMERATED {`
	`  ms50, ms100, ms150, ms200, ms500, ms1000,`
	`  ms2000, spare1},`
	`  newUE-Identity C-RNTI,`
	`  radioResourceConfigCommon RadioResourceConfigCommon`
	`  rach-ConfigDedicated RACH-ConfigDedicated OPTIONAL, -- Need OP`
	`  ...`
	`}`
	
	`CarrierBandwidthEUTRA ::= SEQUENCE {`
	`  dl-Bandwidth ENUMERATED {`
	`  n6, n15, n25, n50, n75, n100, spare10,`
	`  spare9, spare8, spare7, spare6, spare5,`
	`  spare4, spare3, spare2, spare1},`
	`  ul-Bandwidth ENUMERATED {`
	`  n6, n15, n25, n50, n75, n100, spare10,`
	`  spare9, spare8, spare7, spare6, spare5,`
	`  spare4, spare3, spare2, spare1} OPTIONAL -- Need OP`
	`}`
	
	`CarrierFreqEUTRA ::= SEQUENCE {`
	`  dl-CarrierFreq ARFCN-ValueEUTRA,`
	`  ul-CarrierFreq ARFCN-ValueEUTRA OPTIONAL -- Cond FDD`
	`}`
	
	`-- ASN1STOP`
	
	Source: TS 36.331, p. 145

Claim 1	Accused Products

– *RACH-ConfigDedicated*

The IE *RACH-ConfigDedicated* is used to specify the dedicated random access parameters.

***RACH-ConfigDedicated* information element**

```
-- ASN1START

RACH-ConfigDedicated ::=        SEQUENCE {
    ra-PreambleIndex                    INTEGER (0..63),
    ra-PRACH-MaskIndex                  INTEGER (0..15)
}

-- ASN1STOP
```

RACH-ConfigDedicated field descriptions
ra-PreambleIndex
Explicitly signalled Random Access Preamble for RA Resource selection in TS 36.321 [6].
ra-PRACH-MaskIndex
Explicitly signalled PRACH Mask Index for RA Resource selection in TS 36.321 [6].

Source: TS 36.331, p. 127

5.1 Random Access procedure

5.1.1 Random Access Procedure initialization

The Random Access procedure described in this subclause is initiated by a PDCCH order or by the MAC sublayer itself. If a UE receives a PDCCH transmission consistent with a PDCCH order [5] masked with its C-RNTI, it shall initiate a Random Access procedure. The PDCCH order or RRC optionally indicate *ra-PreambleIndex* and *ra-PRACH-MaskIndex*.

Source: TS 36.321,[3] p. 12

[3] 3GPP TS 36.321 V8.12.0 (2012-03), Evolved Universal Terrestrial Radio Access (E-UTRA) Medium Access Control (MAC) protocol specification, (Release 8)

Claim 1	Accused Products
	5.1.2 Random Access Resource selection The Random Access Resource selection procedure shall be performed as follows: - If *ra-PreambleIndex* (Random Access Preamble) and *ra-PRACH-MaskIndex* (PRACH Mask Index) have been explicitly signalled and *ra-PreambleIndex* is not 000000: - the Random Access Preamble and the PRACH Mask Index are those explicitly signalled. **Source:** TS 36.321, p. 13 5.3.5.4 Reception of an *RRCConnectionReconfiguration* including the *mobilityControlInfo* by the UE (handover) If the *RRCConnectionReconfiguration* message includes the *mobilityControlInfo* and the UE is able to comply with the configuration included in this message, the UE shall: 1> stop timer T310, if running; 1> start timer T304 with the timer value set to *t304*, as included in the *mobilityControlInfo*; 1> if the *carrierFreq* is included: 2> consider the target cell to be one on the frequency indicated by the *carrierFreq* with a physical cell identity indicated by the *targetPhysCellId*; 1> else: 2> consider the target cell to be one on the current frequency with a physical cell identity indicated by the *targetPhysCellId*; 1> start synchronising to the DL of the target cell; NOTE 1: The UE should perform the handover as soon as possible following the reception of the RRC message triggering the handover, which could be before confirming successful reception (HARQ and ARQ) of this message. **Source:** TS 36.331, pp. 39-40
[A][3] the random access channel usable by mobile stations for transmission without a prior	As evidenced below, the random access channel is usable by mobile stations for transmission without a prior allocation of resources of the random access channel.

Claim 1	Accused Products
allocation of resources of the random access channel,	The base station usually schedules the transmissions that a mobile makes, by granting it resources for uplink transmission at specific times and on specific sub-carriers. The *random access channel* (RACH) is a special channel through which the mobile can contact the network without any prior scheduling. Random access transmissions are composed by the mobile's MAC protocol and travel as far as the MAC protocol in the base station, but are completely invisible to higher layers. **Source:** Introduction to LTE,[4] p. 108

[4] Christopher Cox, An Introduction to LTE (LTE, LTE-advanced, SAE, VoLTE and 4G mobile communications)(John Wiley & Sons, Ltd. 2d. Ed. 2014)

Claim 1	Accused Products

The transmission of a random access preamble, if triggered by the MAC layer, is restricted to certain time and frequency resources. These resources are enumerated in increasing order of the subframe number within the radio fram and the physical resource blocks in the frequency domain such that index 0 correspond to the lowest numbered physica resource block and subframe within the radio frame. PRACH resources within the radio frame are indicated by a PRACH Resource Index, where the indexing is in the order of appearance in Table 5.7.1-2 and Table 5.7.1-4.

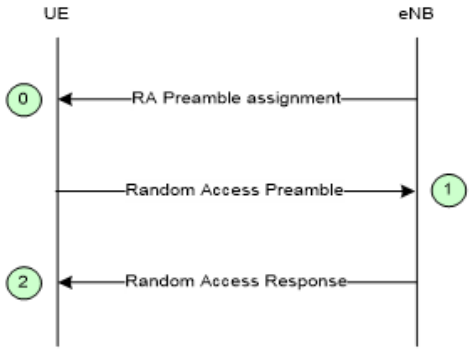
For frame structure type 1 with preamble format 0-3, there is at most one random access resource per subframe. Table 5.7.1-2 lists the preamble formats according to Table 5.7.1-1 and the subframes in which random access preamble transmission is allowed for a given configuration in frame structure type 1. The parameter *prach-ConfigurationIndex* is given by higher layers. The start of the random access preamble shall be aligned with the start of the corresponding uplink subframe at the UE assuming $N_{TA} = 0$, where N_{TA} is defined in section 8.1. For PRACH configuration 0, 1, 2, 15, 16, 17, 18, 31, 32, 33, 34, 47, 48, 49, 50 and 63 the UE may for handover purposes assume an absolute value of the relative time difference between radio frame i in the current cell and the target cell of less than $153600 \cdot T_s$. The first physical resource block n_{PRB}^{RA} allocated to the PRACH opportunity considered for preamble format 0, 1, 2 and 3 is defined as $n_{PRB}^{RA} = n_{PRBoffset}^{RA}$, where the parameter *prach-FrequencyOffset* $n_{PRBoffset}^{RA}$ is expressed as a physical resourc block number configured by higher layers and fulfilling $0 \le n_{PRBoffset}^{RA} \le N_{RB}^{UL} - 6$.

Table 5.7.1-2: Frame structure type 1 random access configuration for preamble format 0-3.

PRACH Configuration Index	Preamble Format	System frame number	Subframe number	PRACH Configuration Index	Preamble Format	System frame number	Subframe number
0	0	Even	1	32	2	Even	1
1	0	Even	4	33	2	Even	4
2	0	Even	7	34	2	Even	7
3	0	Any	1	35	2	Any	1
4	0	Any	4	36	2	Any	4
5	0	Any	7	37	2	Any	7
6	0	Any	1, 6	38	2	Any	1, 6
7	0	Any	2 ,7	39	2	Any	2 ,7
8	0	Any	3, 8	40	2	Any	3, 8
9	0	Any	1, 4, 7	41	2	Any	1, 4, 7
10	0	Any	2, 5, 8	42	2	Any	2, 5, 8
11	0	Any	3, 6, 9	43	2	Any	3, 6, 9
12	0	Any	0, 2, 4, 6, 8	44	2	Any	0, 2, 4, 6, 8
13	0	Any	1, 3, 5, 7, 9	45	2	Any	1, 3, 5, 7, 9
14	0	Any	0, 1, 2, 3, 4, 5, 6, 7, 8, 9	46	N/A	N/A	N/A
15	0	Even	9	47	2	Even	9
16	1	Even	1	48	3	Even	1
17	1	Even	4	49	3	Even	4
18	1	Even	7	50	3	Even	7
19	1	Any	1	51	3	Any	1
20	1	Any	4	52	3	Any	4
21	1	Any	7	53	3	Any	7
22	1	Any	1, 6	54	3	Any	1, 6
23	1	Any	2 ,7	55	3	Any	2 ,7
24	1	Any	3, 8	56	3	Any	3, 8
25	1	Any	1, 4, 7	57	3	Any	1, 4, 7
26	1	Any	2, 5, 8	58	3	Any	2, 5, 8
27	1	Any	3, 6, 9	59	3	Any	3, 6, 9
28	1	Any	0, 2, 4, 6, 8	60	N/A	N/A	N/A
29	1	Any	1, 3, 5, 7, 9	61	N/A	N/A	N/A
30	N/A	N/A	N/A	62	N/A	N/A	N/A
31	1	Even	9	63	3	Even	9

Claim 1	Accused Products
	Source: TS 36.211,[5] pp. 33-44
[A][4] the allocated random access identifier code uniquely identifying the mobile station in a coverage area of the target base station;	As evidenced below, the allocated random access identifier code uniquely identifies the mobile station in a coverage area of the target base station. *9.1.2 Preamble Sequence Generation* Each cell supports 64 different preamble sequences. The mobile generates these from the Zadoff-Chu sequences that we introduced in Chapter 7, using 64 different combinations of the root sequence and the cyclic shift. The base station tells the mobile which combinations to use, by means of a parameter called the *root sequence index* that it advertises in SIB 2. Nearby cells use different root sequence indexes, which are assigned either during network planning or by the self optimization functions that we will discuss in Chapter 19. The base station can distinguish mobiles that are transmitting on the same set of resource blocks, provided that their preamble sequences are different. To help achieve this, it reserves some of the 64 preamble sequences for the non contention based random access procedure that we will discuss next and assigns them to individual mobiles by means of RRC signalling. The remainder are available for the contention based procedure and are chosen at random by the mobile. **Source:** Introduction to LTE, p. 153 5.1.2 Random Access Resource selection The Random Access Resource selection procedure shall be performed as follows: - If *ra-PreambleIndex* (Random Access Preamble) and *ra-PRACH-MaskIndex* (PRACH Mask Index) have been explicitly signalled and *ra-PreambleIndex* is not 000000: - the Random Access Preamble and the PRACH Mask Index are those explicitly signalled. **Source:** TS 36.321, p. 13

[5] 3GPP TS 36.211 V8.9.0 (2009-12), Evolved Universal Terrestrial Radio Access (E-UTRA); Physical Channels and Modulation; (Release 8)

Claim 1	Accused Products
	10.1.5.2 Non-contention based random access procedure The non-contention based random access procedure is outlined on Figure 10.1.5.2-1 below:  Figure 10.1.5.2-1: Non-contention based Random Access Procedure **Source:** TS 36.300, p. 54
[B] transmitting, by the mobile station to the target base station, the allocated random access identifier code over the random access channel of the target base station, wherein the transmitted random access identifier code is usable by the target base station to generate a feedback message comprising a timing adjustment to synchronize the mobile station with the target base station;	As evidenced below, an Accused Product operating on an LTE network transmits, to the target base station, the allocated random access identifier code over the random access channel of the target base station, wherein the transmitted random access identifier code is usable by the target base station to generate a feedback message comprising a timing adjustment to synchronize the mobile station with the target base station. 5.1.2 Random Access Resource selection The Random Access Resource selection procedure shall be performed as follows: - If *ra-PreambleIndex* (Random Access Preamble) and *ra-PRACH-MaskIndex* (PRACH Mask Index) have been explicitly signalled and *ra-PreambleIndex* is not 000000: - the Random Access Preamble and the PRACH Mask Index are those explicitly signalled. **Source:** TS 36.321, p. 13

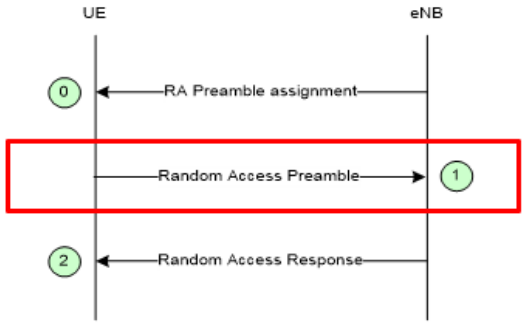
Claim 1	Accused Products
	5.1.3 Random Access Preamble transmission The random-access procedure shall be performed as follows: - set PREAMBLE_RECEIVED_TARGET_POWER to *preambleInitialReceivedTargetPower* + DELTA_PREAMBLE + (PREAMBLE_TRANSMISSION_COUNTER – 1) * *powerRampingStep*; - instruct the physical layer to transmit a preamble using the selected PRACH, corresponding RA-RNTI, preamble index and PREAMBLE_RECEIVED_TARGET_POWER. **Source:** TS 36.321, p. 14 10.1.5.2 Non-contention based random access procedure The non-contention based random access procedure is outlined on Figure 10.1.5.2-1 below:  **Figure 10.1.5.2-1: Non-contention based Random Access Procedure** **Source:** TS 36.300, p. 54

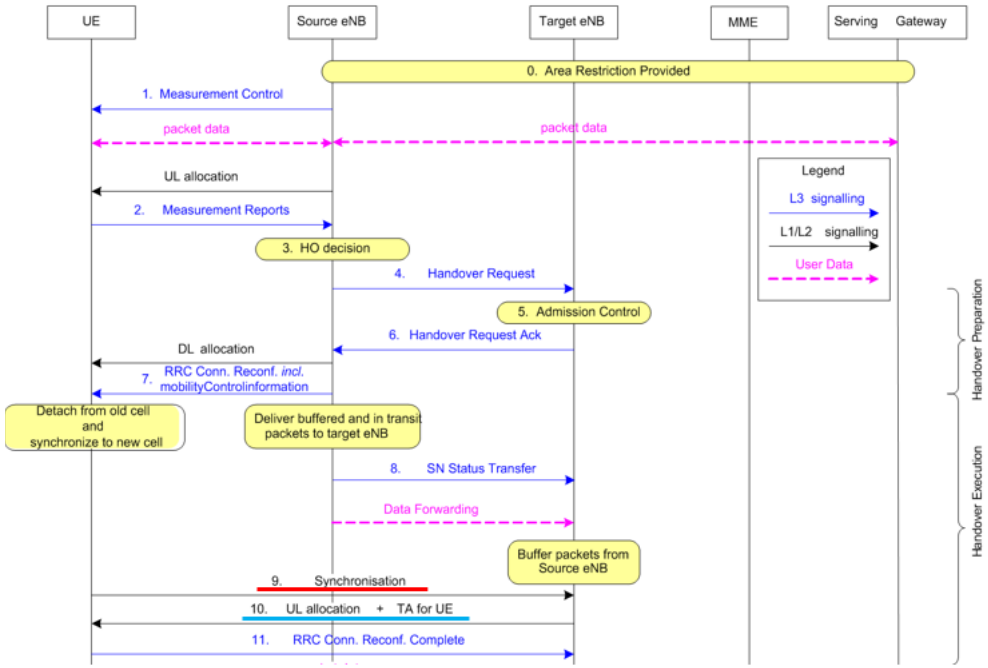
Exhibit A – U.S. Patent No. 8,259,688

Claim 1	Accused Products
	The three steps of the non-contention based random access procedures are: 0) Random Access Preamble assignment via dedicated signalling in DL: - eNB assigns to UE a non-contention Random Access Preamble (a Random Access Preamble not within the set broadcasted on BCH). - Signalled via: - HO command generated by target eNB and sent via source eNB for handover; - PDCCH in case of DL data arrival. 1) Random Access Preamble on RACH in uplink: - UE transmits the assigned non-contention Random Access Preamble. 2) Random Access Response on DL-SCH: - Semi-synchronous (within a flexible window of which the size is one or more TTI) with message 1; - No HARQ; - Addressed to RA-RNTI on PDCCH; - Conveys at least: - Timing Alignment information and initial UL grant for handover; - Timing Alignment information for DL data arrival; - RA-preamble identifier. - Intended for one or multiple UEs in one DL-SCH message. **Source:** TS 36.300, p. 54

Exhibit A – U.S. Patent No. 8,259,688

Claim 1	Accused Products
	10.1.2.1 Handover The intra E-UTRAN HO in RRC_CONNECTED state is UE assisted NW controlled HO, with HO preparation signalling in E-UTRAN: - Part of the HO command comes from the target eNB and is transparently forwarded to the UE by the source eNB; - To prepare the HO, the source eNB passes all necessary information to the target eNB (e.g. E-RAB attributes and RRC context); - Both the source eNB and UE keep some context (e.g. C-RNTI) to enable the return of the UE in case of HO failure; - UE accesses the target cell via RACH following a contention-free procedure using a dedicated RACH preamble or following a contention-based procedure if dedicated RACH preambles are not available: - the UE uses the dedicated preamble until the handover procedure is finished (successfully or unsuccessfully); - If the RACH procedure towards the target cell is not successful within a certain time, the UE initiates radio link failure recovery using the best cell; - No ROHC context is transferred at handover. **Source:** TS 36.300, p. 44

Claim 1	Accused Products



Source: TS 36.300, p. 45

9 After receiving the *RRCConnectionReconfiguration* message including the *mobilityControlInformation* , UE performs synchronisation to target eNB and accesses the target cell via RACH, following a contention-free procedure if a dedicated RACH preamble was indicated in the *mobilityControlInformation*, or following a contention-based procedure if no dedicated preamble was indicated. UE derives target eNB specific keys and configures the selected security algorithms to be used in the target cell.

10 The target eNB responds with UL allocation and timing advance.

Source: TS 36.300, p. 46

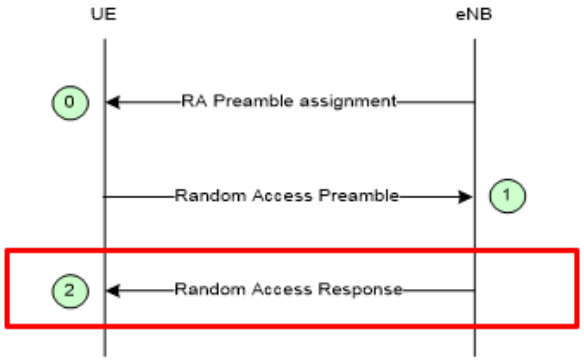
Claim 1	Accused Products
[C] receiving, by the mobile station from the target base station, the feedback message; and	As evidenced below, an Accused Product operating on an LTE network receives, from the target base station, the feedback message. 10.1.5.2 Non-contention based random access procedure The non-contention based random access procedure is outlined on Figure 10.1.5.2-1 below:  **Figure 10.1.5.2-1: Non-contention based Random Access Procedure** **Source:** TS 36.300, p. 54

Exhibit A – U.S. Patent No. 8,259,688

Claim 1	Accused Products
	The three steps of the non-contention based random access procedures are: 0) Random Access Preamble assignment via dedicated signalling in DL: - eNB assigns to UE a non-contention Random Access Preamble (a Random Access Preamble not within the set broadcasted on BCH). - Signalled via: - HO command generated by target eNB and sent via source eNB for handover; - PDCCH in case of DL data arrival. 1) Random Access Preamble on RACH in uplink: - UE transmits the assigned non-contention Random Access Preamble. 2) Random Access Response on DL-SCH: - Semi-synchronous (within a flexible window of which the size is one or more TTI) with message 1; - No HARQ; - Addressed to RA-RNTI on PDCCH; - Conveys at least: - Timing Alignment information and initial UL grant for handover; - Timing Alignment information for DL data arrival; - RA-preamble identifier. - Intended for one or multiple UEs in one DL-SCH message. **Source:** TS 36.300, p. 54

Claim 1	Accused Products

6.1.5 MAC PDU (Random Access Response)

A MAC PDU consists of a MAC header and zero or more MAC Random Access Responses (MAC RAR) and optionally padding as described in figure 6.1.5-4.

The MAC header is of variable size.

A MAC PDU header consists of one or more MAC PDU subheaders; each subheader corresponding to a MAC RAR except for the Backoff Indicator subheader. If included, the Backoff Indicator subheader is only included once and is the first subheader included within the MAC PDU header.

A MAC PDU subheader consists of the three header fields E/T/RAPID (as described in figure 6.1.5-1) but for the Backoff Indicator subheader which consists of the five header field E/T/R/R/BI (as described in figure 6.1.5-2).

A MAC RAR consists of the four fields R/Timing Advance Command/UL Grant/Temporary C-RNTI (as described in figure 6.1.5-3).

Padding may occur after the last MAC RAR. Presence and length of padding is implicit based on TB size, size of MAC header and number of RARs.

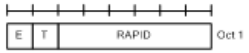


Figure 6.1.5-1: E/T/RAPID MAC subheader

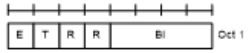


Figure 6.1.5-2: E/T/R/R/BI MAC subheader

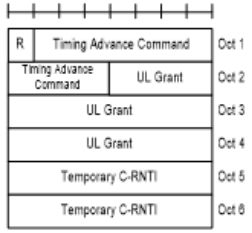


Figure 6.1.5-3: MAC RAR

Source: TS 36.321, pp. 35-36

Claim 1	Accused Products
	6.2.2 MAC header for Random Access Response The MAC header is of variable size and consists of the following fields: - E: The Extension field is a flag indicating if more fields are present in the MAC header or not. The E field is set to "1" to indicate at least another set of E/T/RAPID fields follows. The E field is set to "0" to indicate that a MAC RAR or padding starts at the next byte; - T: The Type field is a flag indicating whether the MAC subheader contains a Random Access ID or a Backoff Indicator. The T field is set to "0" to indicate the presence of a Backoff Indicator field in the subheader (BI). The T field is set to "1" to indicate the presence of a Random Access Preamble ID field in the subheader (RAPID); - R: Reserved bit, set to "0"; - BI: The Backoff Indicator field identifies the overload condition in the cell. The size of the BI field is 4 bits; - RAPID: The Random Access Preamble IDentitfier field identifies the transmitted Random Access Preamble (see subclause 5.1.3). The size of the RAPID field is 6 bits. The MAC header and subheaders are octet aligned. **Source:** TS 36.321, pp. 37-38

Claim 1	Accused Products
	6.2.3 MAC payload for Random Access Response The MAC RAR is of fixed size and consists of the following fields: - R: Reserved bit, set to "0"; - Timing Advance Command: The Timing Advance Command field indicates the index value T_A (0, 1, 2… 1282) used to control the amount of timing adjustment that UE has to apply (see subclause 4.2.3 of [2]). The size of the Timing Advance Command field is 11 bits; - UL Grant: The UpLink Grant field indicates the resources to be used on the uplink (see subclause 6.2 of [2]). The size of the UL Grant field is 20 bits; - Temporary C-RNTI: The Temporary C-RNTI field indicates the temporary identity that is used by the UE during Random Access. The size of the Temporary C-RNTI field is 16 bits. The MAC RAR is octet aligned. **Source:** TS 36.321, p. 38 5.1.4 Random Access Response reception [...] - If a downlink assignment for this TTI has been received on the PDCCH for the RA-RNTI and the received TB is successfully decoded, the UE shall regardless of the possible occurrence of a measurement gap: - if the Random Access Response contains a Backoff Indicator subheader: - set the backoff parameter value in the UE as indicated by the BI field of the Backoff Indicator subheader and Table 7.2-1. - else, set the backoff parameter value in the UE to 0 ms. - if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble (see subclause 5.1.3), the UE shall: - consider this Random Access Response reception successful; - process the received Timing Advance Command (see subclause 5.2);

Claim 1	Accused Products
	Source: TS 36.321, p. 14
[D] synchronizing the mobile station with the target base station using the feedback message.	As evidenced below, an Accused Product operating on an LTE network synchronizes with the target base station using the feedback message. The three steps of the non-contention based random access procedures are: 0) Random Access Preamble assignment via dedicated signalling in DL: - eNB assigns to UE a non-contention Random Access Preamble (a Random Access Preamble not within the set broadcasted on BCH). - Signalled via: - HO command generated by target eNB and sent via source eNB for handover; - PDCCH in case of DL data arrival. 1) Random Access Preamble on RACH in uplink: - UE transmits the assigned non-contention Random Access Preamble. 2) Random Access Response on DL-SCH: - Semi-synchronous (within a flexible window of which the size is one or more TTI) with message 1; - No HARQ; - Addressed to RA-RNTI on PDCCH; - Conveys at least: - Timing Alignment information and initial UL grant for handover; - Timing Alignment information for DL data arrival; - RA-preamble identifier. - Intended for one or multiple UEs in one DL-SCH message. **Source:** TS 36.300, p. 54

Claim 1	Accused Products
	5.1.4 Random Access Response reception [...] - If a downlink assignment for this TTI has been received on the PDCCH for the RA-RNTI and the received TB is successfully decoded, the UE shall regardless of the possible occurrence of a measurement gap: - if the Random Access Response contains a Backoff Indicator subheader: - set the backoff parameter value in the UE as indicated by the BI field of the Backoff Indicator subheader and Table 7.2-1. - else, set the backoff parameter value in the UE to 0 ms. - if the Random Access Response contains a Random Access Preamble identifier corresponding to the transmitted Random Access Preamble (see subclause 5.1.3), the UE shall: - consider this Random Access Response reception successful; - process the received Timing Advance Command (see subclause 5.2); **Source:** TS 36.321, p. 14 5.2 Maintenance of Uplink Time Alignment The UE has a configurable timer *timeAlignmentTimer* which is used to control how long the UE is considered uplink time aligned [8]. The UE shall: - when a Timing Advance Command MAC control element is received: - apply the Timing Advance Command; - start or restart *timeAlignmentTimer*. - when a Timing Advance Command is received in a Random Access Response message: - if the Random Access Preamble was not selected by UE MAC: - apply the Timing Advance Command; - start or restart *timeAlignmentTimer*. **Source:** TS 36.321, p. 17

Claim 1	Accused Products
	4.2.3 Transmission timing adjustments Upon reception of a timing advance command, the UE shall adjust its uplink transmission timing for PUCCH/PUSCH/SRS. The timing advance command indicates the change of the uplink timing relative to the current uplink timing as multiples of 16 T_s. The start timing of the random access preamble is specified in [3]. In case of random access response, 11-bit timing advance command [8], T_A, indicates N_{TA} values by index values of $T_A = 0, 1, 2, ..., 1282$, where an amount of the time alignment is given by $N_{TA} = T_A \times 16$. N_{TA} is defined in [3]. In other cases, 6-bit timing advance command [8], T_A, indicates adjustment of the current N_{TA} value, $N_{TA,old}$, to the new N_{TA} value, $N_{TA,new}$, by index values of $T_A = 0, 1, 2, ..., 63$, where $N_{TA,new} = N_{TA,old} + (T_A - 31) \times 16$. Here, adjustment of N_{TA} value by a positive or a negative amount indicates advancing or delaying the uplink transmission timing by a given amount respectively. For a timing advance command received on subframe n, the corresponding adjustment of the timing shall apply from the beginning of subframe $n+6$. When the UE's uplink PUCCH/PUSCH/SRS transmissions in subframe n and subframe $n+1$ are overlapped due to the timing adjustment, the UE shall transmit complete subframe n and not transmit the overlapped part of subframe $n+1$. If the received downlink timing changes and is not compensated or is only partly compensated by the uplink timing adjustment without timing advance command as specified in [10], the UE changes N_{TA} accordingly. **Source:** TS 36.213,[6] p. 8

Claim 2	Accused Products
The method of claim 1, wherein the allocated random access identifier code is released after synchronization.	As evidenced below, the allocated random access identifier code is released after synchronization.

[6] 3GPP TS 36.213 V8.8.0 (2009-09) Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures, (Release 8)

Claim 2	Accused Products
	10.1.2.1 Handover The intra E-UTRAN HO in RRC_CONNECTED state is UE assisted NW controlled HO, with HO preparation signalling in E-UTRAN: - Part of the HO command comes from the target eNB and is transparently forwarded to the UE by the source eNB; - To prepare the HO, the source eNB passes all necessary information to the target eNB (e.g. E-RAB attributes and RRC context); - Both the source eNB and UE keep some context (e.g. C-RNTI) to enable the return of the UE in case of HO failure; - UE accesses the target cell via RACH following a contention-free procedure using a dedicated RACH preamble or following a contention-based procedure if dedicated RACH preambles are not available: - the UE uses the dedicated preamble until the handover procedure is finished (successfully or unsuccessfully); - If the RACH procedure towards the target cell is not successful within a certain time, the UE initiates radio link failure recovery using the best cell; - No ROHC context is transferred at handover. **Source:** TS 36.300, p. 44 5.1.6 Completion of the Random Access procedure At successful completion of the Random Access procedure, the UE shall: - discard explicitly signalled *ra-PreambleIndex* and *ra-PRACH-MaskIndex*, if any; - flush the HARQ buffer used for transmission of the MAC PDU in the Msg3 buffer. **Source:** TS36.321, p. 16

Claim 3	Accused Products
The method of claim 1, wherein the random access channel of the target base station is limited to time and	As evidenced below, an Accused Product operating on an LTE network adjusts at least one operating parameter of a transmission from the mobile subscriber station to the base station.

Claim 3	Accused Products
frequency resources within an uplink communication channel.	5.7 Physical random access channel 5.7.1 Time and frequency structure [...] The transmission of a random access preamble, if triggered by the MAC layer, is restricted to certain time and frequency resources. These resources are enumerated in increasing order of the subframe number within the radio frame and the physical resource blocks in the frequency domain such that index 0 correspond to the lowest numbered physical resource block and subframe within the radio frame. PRACH resources within the radio frame are indicated by a PRACH Resource Index, where the indexing is in the order of appearance in Table 5.7.1-2 and Table 5.7.1-4. For frame structure type 1 with preamble format 0-3, there is at most one random access resource per subframe. Table 5.7.1-2 lists the preamble formats according to Table 5.7.1-1 and the subframes in which random access preamble transmission is allowed for a given configuration in frame structure type 1. The parameter *prach-ConfigurationIndex* is given by higher layers. The start of the random access preamble shall be aligned with the start of the corresponding uplink subframe at the UE assuming $N_{TA} = 0$, where N_{TA} is defined in section 8.1. For PRACH configuration 0, 1, 2, 15, 16, 17, 18, 31, 32, 33, 34, 47, 48, 49, 50 and 63 the UE may for handover purposes assume an absolute value of the relative time difference between radio frame i in the current cell and the target cell of less than $153600 \cdot T_s$. The first physical resource block n_{PRB}^{RA} allocated to the PRACH opportunity considered for preamble format 0, 1, 2 and 3 is defined as $n_{PRB}^{RA} = n_{PRBoffset}^{RA}$, where the parameter *prach-FrequencyOffset* $n_{PRBoffset}^{RA}$ is expressed as a physical resource block number configured by higher layers and fulfilling $0 \le n_{PRBoffset}^{RA} \le N_{RB}^{UL} - 6$. **Source:** TS 36.211, pp. 33-34

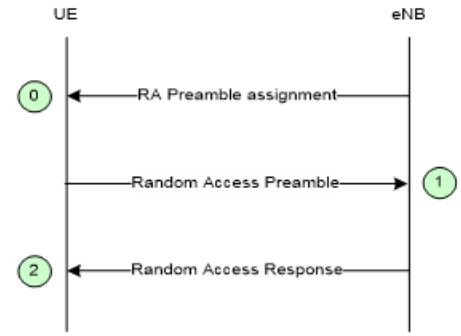
Claim 6	Accused Products
[PRE] A mobile station comprising:	An Accused Product is a "mobile station."
[A][1] a receiver configured to receive, from a serving base station, an indication of a first subset of random access identifier codes randomly selectable by the mobile station for contention based	The Accused Products include hardware/software configured to receive signals when communicating using LTE (i.e., a receiver). As evidenced above, the hardware/software configured to receive signals when communicating using LTE is operable to receive, from a serving base station, an indication of a first subset of random access identifier codes randomly selectable by the mobile station for contention based transmission on a random access channel of a target base station. *See* Claim 1, [A][1].

Claim 6	Accused Products
transmission on a random access channel of a target base station, and	
[A][2] [a receiver configured to receive, from a serving base station,] … an indication of an allocated random access identifier code for non-contention based transmission on the random access channel of the target base station and not available for random selection by the mobile station for contention based transmission on the random access channel of the target base station,	As evidenced above, the hardware/software configured to receive signals when communicating using LTE is operable to receive, from a serving base station, an indication of an allocated random access identifier code for non-contention based transmission on the random access channel of the target base station and not available for random selection by the mobile station for contention based transmission on the random access channel of the target base station. *See* Claim 1, [A][2].
[A][3] the random access channel usable by mobile stations for transmission without a prior allocation of resources of the random access channel,	As evidenced above, the random access channel is usable by mobile stations for transmission without a prior allocation of resources of the random access channel. *See* Claim 1, [A][3].
[A][4] the allocated random access identifier code uniquely identifying the mobile station in a coverage area of the target base station;	As evidenced above, the allocated random access identifier code uniquely identifies the mobile station in a coverage area of the target base station. *See* Claim 1, [A][4].
[B] a transmitter configured to transmit, to the target base station, the allocated random access identifier code over the random access channel of the target base station, wherein the transmitted	The Accused Products include hardware/software configured to transmit signals when communicating using LTE (i.e., a transmitter). As evidenced above, the hardware/software configured to transmit signals when communicating using LTE is configured to transmit, to the target base station, the allocated random access identifier code over the random access channel of the target base station, wherein the transmitted random access identifier code is

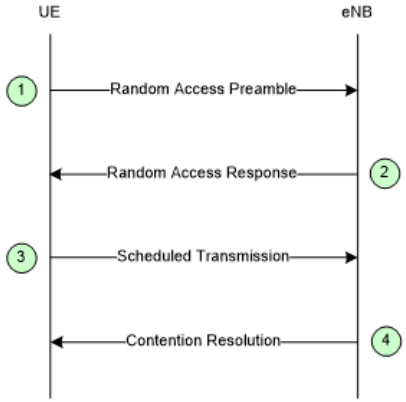
Claim 6	Accused Products
random access identifier code is usable by the target base station to generate a feedback message comprising a timing adjustment to synchronize the mobile station with the target base station;	usable by the target base station to generate a feedback message comprising a timing adjustment to synchronize the mobile station with the target base station. *See* Claim 1, [B].
[C] the receiver further configured to receive, from the target base station, the feedback message; and	As evidenced above, the hardware/software configured to receive signals when communicating using LTE is further configured to receive from the target base station, the feedback message. *See* Claim 1, [C].
[D] a processor configured to synchronize the mobile station with the target base station using the feedback message.	The Accused Products include one or more processors (e.g., processor(s) in a telematics unit, processor(s) in a data communications module) configured to implement and/or support LTE communications. As evidenced above, the one or more processors are configured to synchronize the mobile station with the target base station using the feedback message. *See* Claim 1, [D].

Claim 7	Accused Products
The mobile station of claim 6, wherein the allocated random access identifier code is released after synchronization.	As evidenced above, the allocated random access identifier code is released after synchronization. *See* Claim 2.

Claim 8	Accused Products
The mobile station of claim 6, wherein the random access channel of the target base station is limited to time and frequency resources within an uplink communication channel.	As evidenced above, the random access channel of the target base station is limited to time and frequency resources within an uplink communication channel. *See* Claim 3.

Claim 17	Accused Products
The method of claim 1, whereby the allocated random access identifier code avoids a collision probability associated with other random access identifier codes randomly selected and transmitted by other mobile stations for contention based transmission on the random access channel of the target base station, and whereby the allocated random access identifier code avoids a collision probability associated with other allocated random access identifier codes not randomly selectable by a mobile station and transmitted by other mobile stations for non-contention based transmission on the random access channel of the target base station.	As evidenced below, the allocated random access identifier code avoids a collision probability associated with other random access identifier codes randomly selected and transmitted by other mobile stations for contention based transmission on the random access channel of the target base station, and the allocated random access identifier code avoids a collision probability associated with other allocated random access identifier codes not randomly selectable by a mobile station and transmitted by other mobile stations for non-contention based transmission on the random access channel of the target base station. 10.1.5.2 Non-contention based random access procedure The non-contention based random access procedure is outlined on Figure 10.1.5.2-1 below:  **Figure 10.1.5.2-1: Non-contention based Random Access Procedure** **Source:** TS 36.300, p. 54

Claim 18	Accused Products
The method of claim 1, further comprising:	As evidenced below, an Accused Product operating on an LTE network transmits, to the target base station using the random access channel of the target base station, a random

Claim 18	Accused Products
transmitting, from the mobile station to the target base station using the random access channel of the target base station, a random access identifier code randomly selected by the mobile station from the first subset of random access identifier codes.	access identifier code randomly selected by the mobile station from the first subset of random access identifier codes. 10.1.5.1 Contention based random access procedure The contention based random access procedure is outlined on Figure 10.1.5.1-1 below:  **Figure 10.1.5.1-1: Contention based Random Access Procedure** The four steps of the contention based random access procedures are: 1) Random Access Preamble on RACH in uplink: - There are two possible groups defined and one is optional. If both groups are configured the size of message 3 and the pathloss are used to determine which group a preamble is selected from. The group to which a preamble belongs provides an indication of the size of the message 3 and the radio conditions at the UE. The preamble group information along with the necessary thresholds are broadcast on system information. **Source:** TS 36.300, p. 52

Claim 18	Accused Products
	5.1.2 Random Access Resource selection The Random Access Resource selection procedure shall be performed as follows: - If *ra-PreambleIndex* (Random Access Preamble) and *ra-PRACH-MaskIndex* (PRACH Mask Index) have been explicitly signalled and *ra-PreambleIndex* is not 000000: - the Random Access Preamble and the PRACH Mask Index are those explicitly signalled. - else the Random Access Preamble shall be selected by the UE as follows: - If Msg3 has not yet been transmitted, the UE shall: - If Random Access Preambles group B exists and if the potential message size (data available for transmission plus MAC header and, where required, MAC control elements) is greater than *messageSizeGroupA* and if the pathloss is less than P_{CMAX} – *preambleInitialReceivedTargetPower* – *deltaPreambleMsg3* – *messagePowerOffsetGroupB*, then: - select the Random Access Preambles group B; - else: - select the Random Access Preambles group A. - else, if Msg3 is being retransmitted, the UE shall: - select the same group of Random Access Preambles as was used for the preamble transmission attempt corresponding to the first transmission of Msg3. - randomly select a Random Access Preamble within the selected group. The random function shall be such that each of the allowed selections can be chosen with equal probability; - set PRACH Mask Index to 0. - determine the next available subframe containing PRACH permitted by the restrictions given by the *prach-ConfigIndex*, the PRACH Mask Index (see subclause 7.3) and physical layer timing requirements [2] (a UE may take into account the possible occurrence of measurement gaps when determining the next available PRACH subframe); - If the transmission mode is TDD and the PRACH Mask Index is equal to zero: [...] - else: - determine a PRACH within the determined subframe in accordance with the requirements of the PRACH Mask Index. - proceed to the transmission of the Random Access Preamble (see subclause 5.1.3). **Source:** TS 36.321, pp. 13-14

Claim 19	Accused Products

The method of claim 1, wherein the first subset of random access identifier codes is a range of random access identifier codes.	As evidenced below, the first subset of random access identifier codes is a range of random access identifier codes.
	
	– *RACH-ConfigCommon*
	
	The IE *RACH-ConfigCommon* is used to specify the generic random access parameters.
	
	***RACH-ConfigCommon* information element**
	
	`-- ASN1START`
	
	`RACH-ConfigCommon ::= SEQUENCE {`
	`preambleInfo SEQUENCE {`
	`numberOfRA-Preambles ENUMERATED {`
	`n4, n8, n12, n16 ,n20, n24, n28,`
	`n32, n36, n40, n44, n48, n52, n56,`
	`n60, n64},`
	
	[...]
	
	RACH-ConfigCommon field descriptions
	numberOfRA-Preambles
	Number of non-dedicated random access preambles in TS 36.321 [6]. Value is an integer. Value n4 corresponds to 4, n8 corresponds to 8 and so on.
	
	Source: TS 36.331, pp. 126-27

Claim 20	Accused Products
The method of claim 1, wherein the first subset of random access identifier codes selectable by the mobile station for contention based transmission on the random access channel of the target base station	As evidenced below, the first subset of random access identifier codes selectable by the mobile station for contention based transmission on the random access channel of the target base station includes a plurality of groups of random access identifier codes.

Claim 20	Accused Products

includes a plurality of groups of random access identifier codes.	5.1.2 Random Access Resource selection
	The Random Access Resource selection procedure shall be performed as follows:
	- If *ra-PreambleIndex* (Random Access Preamble) and *ra-PRACH-MaskIndex* (PRACH Mask Index) have been explicitly signalled and *ra-PreambleIndex* is not 000000:
	  - the Random Access Preamble and the PRACH Mask Index are those explicitly signalled.
	- else the Random Access Preamble shall be selected by the UE as follows:
	  - If Msg3 has not yet been transmitted, the UE shall:
	  - if Random Access Preambles group B exists and if the potential message size (data available for transmission plus MAC header and, where required, MAC control elements) is greater than *messageSizeGroupA* and if the pathloss is less than P_{CMAX} – *preambleInitialReceivedTargetPower* – *deltaPreambleMsg3* – *messagePowerOffsetGroupB*, then:
	  - select the Random Access Preambles group B;
	  - else:
	  - select the Random Access Preambles group A.
	  - else, if Msg3 is being retransmitted, the UE shall:
	  - select the same group of Random Access Preambles as was used for the preamble transmission attempt corresponding to the first transmission of Msg3.
	  - randomly select a Random Access Preamble within the selected group. The random function shall be such that each of the allowed selections can be chosen with equal probability;
	Source: TS 36.321, p. 13

Claim 21	Accused Products
The method of claim 20, wherein the plurality of groups of random access identifier codes are distinguished by usage types.	As evidenced below, the plurality of groups of random access identifier codes are distinguished by usage types.

Claim 21	Accused Products
	5.1.2 Random Access Resource selection The Random Access Resource selection procedure shall be performed as follows: - If *ra-PreambleIndex* (Random Access Preamble) and *ra-PRACH-MaskIndex* (PRACH Mask Index) have been explicitly signalled and *ra-PreambleIndex* is not 000000: - the Random Access Preamble and the PRACH Mask Index are those explicitly signalled. - else the Random Access Preamble shall be selected by the UE as follows: - If Msg3 has not yet been transmitted, the UE shall: - if Random Access Preambles group B exists and if the potential message size (data available for transmission plus MAC header and, where required, MAC control elements) is greater than *messageSizeGroupA* and if the pathloss is less than P_{CMAX} – *preambleInitialReceivedTargetPower* – *deltaPreambleMsg3* – *messagePowerOffsetGroupB*, then: - select the Random Access Preambles group B; - else: - select the Random Access Preambles group A. - else, if Msg3 is being retransmitted, the UE shall: - select the same group of Random Access Preambles as was used for the preamble transmission attempt corresponding to the first transmission of Msg3. - randomly select a Random Access Preamble within the selected group. The random function shall be such that each of the allowed selections can be chosen with equal probability; **Source:** TS 36.321, p. 13

Claim 22	Accused Products
The method of claim 21, wherein two of the usage types are associated with different size bandwidth requests.	As evidenced below, two of the usage types are associated with different size bandwidth requests.

Claim 22	Accused Products

	5.1.2 Random Access Resource selection
	The Random Access Resource selection procedure shall be performed as follows:
	- If *ra-PreambleIndex* (Random Access Preamble) and *ra-PRACH-MaskIndex* (PRACH Mask Index) have been explicitly signalled and *ra-PreambleIndex* is not 000000:
	  - the Random Access Preamble and the PRACH Mask Index are those explicitly signalled.
	- else the Random Access Preamble shall be selected by the UE as follows:
	  - If Msg3 has not yet been transmitted, the UE shall:
	  - if Random Access Preambles group B exists and if the potential message size (data available for transmission plus MAC header and, where required, MAC control elements) is greater than *messageSizeGroupA* and if the pathloss is less than P_{CMAX} – *preambleInitialReceivedTargetPower* – *deltaPreambleMsg3* – *messagePowerOffsetGroupB*, then:
	  - select the Random Access Preambles group B;
	  - else:
	  - select the Random Access Preambles group A.
	  - else, if Msg3 is being retransmitted, the UE shall:
	  - select the same group of Random Access Preambles as was used for the preamble transmission attempt corresponding to the first transmission of Msg3.
	  - randomly select a Random Access Preamble within the selected group. The random function shall be such that each of the allowed selections can be chosen with equal probability;
	Source: TS 36.321, p. 13

Claim 26	Accused Products
The method of claim 1, further comprising: receiving, by the mobile station from the serving base station, an indication of a second subset of	As evidenced below, an Accused Product operating on an LTE network receives, from the serving base station, an indication of a second subset of random access identifier codes randomly selectable by the mobile station for contention based transmission on a random access channel of the serving base station.

Claim 26	Accused Products

random access identifier codes randomly selectable by the mobile station for contention based transmission on a random access channel of the serving base station.	5.2.1.1 General
	
	System information is divided into the *MasterInformationBlock* (MIB) and a number of *SystemInformationBlocks* (SIBs). The MIB includes a limited number of most essential and most frequently transmitted parameters that are needed to acquire other information from the cell, and is transmitted on BCH. SIB s other than *SystemInformationBlockType1* are carried in *SystemInformation* (SI) messages and mapping of SIBs to SI messages is flexibly configurable by *schedulingInfoList* included in *SystemInformationBlockType1*, with restrictions that: each SIB is contained only in a single SI message, only SIBs having the same scheduling requirement (periodicity) can be mapped to the same SI message, and *SystemInformationBlockType2* is always mapped to the SI message that corresponds to the first entry in the list of SI messages in *schedulingInfoList*. There may be multiple SI messages transmitted with the same periodicity. *SystemInformationBlockType1* and all SI messages are transmitted on DL-SCH.
	
	Source: TS 36.331, p. 21
	
	6.3.1 System information blocks
	
	– *SystemInformationBlockType2*
	
	The IE *SystemInformationBlockType2* contains radio resource configuration information that is common for all UEs.
	
	NOTE: UE timers and constants related to functionality for which parameters are provided in another SIB are included in the corresponding SIB.
	
	***SystemInformationBlockType2* information element**
	
	`-- ASN1START`
	
	`SystemInformationBlockType2 ::= SEQUENCE {`
	`ac-BarringInfo SEQUENCE {`
	`ac-BarringForEmergency BOOLEAN,`
	`ac-BarringForMO-Signalling AC-BarringConfig OPTIONAL, -- Need OP`
	`ac-BarringForMO-Data AC-BarringConfig OPTIONAL -- Need OP`
	`} OPTIONAL, -- Need OP`
	`radioResourceConfigCommon RadioResourceConfigCommonSIB,`
	`ue-TimersAndConstants UE-TimersAndConstants,`
	`freqInfo SEQUENCE {`
	`ul-CarrierFreq ARFCN-ValueEUTRA OPTIONAL, -- Need OP`
	`ul-Bandwidth ENUMERATED {n6, n15, n25, n50, n75, n100}`
	`OPTIONAL, -- Need OP`
	`additionalSpectrumEmission AdditionalSpectrumEmission`
	`},`
	`mbsfn-SubframeConfigList MBSFN-SubframeConfigList OPTIONAL, -- Need OR`
	`timeAlignmentTimerCommon TimeAlignmentTimer,`
	`...,`
	`lateNonCriticalExtension OCTET STRING (CONTAINING SystemInformationBlockType2-v8h0-IEs)`
	`OPTIONAL -- Need OP`
	`}`
	
	Source: TS 36.331, p. 105

Claim 26	Accused Products

– *RadioResourceConfigCommon*

The IE *RadioResourceConfigCommonSIB* and IE *RadioResourceConfigCommon* are used to specify common radio resource configurations in the system information and in the mobility control information, respectively, e.g., the random access parameters and the static physical layer parameters.

***RadioResourceConfigCommon* information element**

```
-- ASN1START

RadioResourceConfigCommonSIB ::=    SEQUENCE {
    rach-ConfigCommon                   RACH-ConfigCommon,
    bcch-Config                         BCCH-Config,
    pcch-Config                         PCCH-Config,
    prach-Config                        PRACH-ConfigSIB,
    pdsch-ConfigCommon                  PDSCH-ConfigCommon,
    pusch-ConfigCommon                  PUSCH-ConfigCommon,
    pucch-ConfigCommon                  PUCCH-ConfigCommon,
    soundingRS-UL-ConfigCommon          SoundingRS-UL-ConfigCommon,
    uplinkPowerControlCommon            UplinkPowerControlCommon,
    ul-CyclicPrefixLength               UL-CyclicPrefixLength,
    ...
}

RadioResourceConfigCommon ::=       SEQUENCE {
    rach-ConfigCommon                   RACH-ConfigCommon                   OPTIONAL,   -- Need ON
    prach-Config                        PRACH-Config,
    pdsch-ConfigCommon                  PDSCH-ConfigCommon                  OPTIONAL,   -- Need ON
    pusch-ConfigCommon                  PUSCH-ConfigCommon,
    phich-Config                        PHICH-Config                        OPTIONAL,   -- Need ON
    pucch-ConfigCommon                  PUCCH-ConfigCommon                  OPTIONAL,   -- Need ON
    soundingRS-UL-ConfigCommon          SoundingRS-UL-ConfigCommon          OPTIONAL,   -- Need ON
    uplinkPowerControlCommon            UplinkPowerControlCommon            OPTIONAL,   -- Need ON
    antennaInfoCommon                   AntennaInfoCommon           OPTIONAL,   -- Need ON
    p-Max                               P-Max                               OPTIONAL,   -- Need OP
    tdd-Config                          TDD-Config                          OPTIONAL,   -- Cond TDD
    ul-CyclicPrefixLength               UL-CyclicPrefixLength,
    ...
}
```

Source: TS 36.331, p. 128

Claim 26	Accused Products

	– *RACH-ConfigCommon*
	The IE *RACH-ConfigCommon* is used to specify the generic random access parameters.
	***RACH-ConfigCommon* information element**
	`-- ASN1START`
	`RACH-ConfigCommon ::= SEQUENCE {`
	`  preambleInfo SEQUENCE {`
	`  numberOfRA-Preambles ENUMERATED {`
	`  n4, n8, n12, n16 ,n20, n24, n28,`
	`  n32, n36, n40, n44, n48, n52, n56,`
	`  n60, n64},`
	[…]
	RACH-ConfigCommon field descriptions
	numberOfRA-Preambles
	Number of non-dedicated random access preambles in TS 36.321 [6]. Value is an integer. Value n4 corresponds to 4, n8 corresponds to 8 and so on.
	Source: TS 36.331, pp. 126-27

Claim 27	Accused Products
The method of claim 1, further comprising: [A] randomly selecting, based on not receiving an indication of an allocated random access identifier code for non-contention based transmission from the target base station, a random access identifier code from the first subset of random access identifier codes; and	As evidenced below, an Accused Product operating on an LTE network randomly selects, based on not receiving an indication of an allocated random access identifier code for non-contention based transmission from the target base station, a random access identifier code from the first subset of random access identifier codes.

Claim 27	Accused Products
	5.1.2 Random Access Resource selection The Random Access Resource selection procedure shall be performed as follows: - If *ra-PreambleIndex* (Random Access Preamble) and *ra-PRACH-MaskIndex* (PRACH Mask Index) have been explicitly signalled and *ra-PreambleIndex* is not 000000: - the Random Access Preamble and the PRACH Mask Index are those explicitly signalled. - else the Random Access Preamble shall be selected by the UE as follows: - If Msg3 has not yet been transmitted, the UE shall: - if Random Access Preambles group B exists and if the potential message size (data available for transmission plus MAC header and, where required, MAC control elements) is greater than *messageSizeGroupA* and if the pathloss is less than P_{CMAX} – *preambleInitialReceivedTargetPower* – *deltaPreambleMsg3* – *messagePowerOffsetGroupB*, then: - select the Random Access Preambles group B; - else: - select the Random Access Preambles group A. - else, if Msg3 is being retransmitted, the UE shall: - select the same group of Random Access Preambles as was used for the preamble transmission attempt corresponding to the first transmission of Msg3. - randomly select a Random Access Preamble within the selected group. The random function shall be such that each of the allowed selections can be chosen with equal probability; **Source:** TS 36.321, p. 13
[B] transmitting, from the mobile station to the target base station, the randomly selected random access identifier code using the random access channel of the target base station.	As evidenced below, an Accused Product operating on an LTE network transmits, to the base station, the randomly selected random access identifier code using the random access channel of the target base station.

Claim 27	Accused Products
	5.1.3 Random Access Preamble transmission The random-access procedure shall be performed as follows: - set PREAMBLE_RECEIVED_TARGET_POWER to *preambleInitialReceivedTargetPower* + DELTA_PREAMBLE + (PREAMBLE_TRANSMISSION_COUNTER – 1) * *powerRampingStep*; - instruct the physical layer to transmit a preamble using the selected PRACH, corresponding RA-RNTI, preamble index and PREAMBLE_RECEIVED_TARGET_POWER. **Source:** TS 36.321, p. 14

Claim 28	Accused Products
The method of claim 1, further comprising: transmitting from the mobile station to the target base station, a medium access control (MAC) identifier using resources assigned by the target base station based on the transmitting of the allocated random access identifier code.	As evidenced below, an Accused Product operating on an LTE network transmits, to the target base station, a medium access control (MAC) identifier using resources assigned by the target base station based on the transmitting of the allocated random access identifier code. 10 The target eNB responds with UL allocation and timing advance. 11 When the UE has successfully accessed the target cell, the UE sends the *RRCConnectionReconfigurationComplete* message (C-RNTI) to confirm the handover, along with an uplink Buffer Status Report, whenever possible, to the target eNB to indicate that the handover procedure is completed for the UE. The target eNB verifies the C-RNTI sent in the *RRCConnectionReconfigurationComplete* message. The target eNB can now begin sending data to the UE. **Source:** TS 36.300, p. 46

Claim 29	Accused Products
The mobile station of claim 6, whereby the allocated random	As evidenced above, the allocated random access identifier code avoids a collision probability associated with other random access identifier codes randomly selected and

Claim 29	Accused Products
access identifier code avoids a collision probability associated with other random access identifier codes randomly selected and transmitted by other mobile stations for contention based transmission on the random access channel of the target base station, and whereby the allocated random access identifier code avoids a collision probability associated with other allocated random access identifier codes not randomly selectable by a mobile station and transmitted by other mobile stations for non-contention based transmission on the random access channel of the target base station.	transmitted by other mobile stations for contention based transmission on the random access channel of the target base station, and the allocated random access identifier code avoids a collision probability associated with other allocated random access identifier codes not randomly selectable by a mobile station and transmitted by other mobile stations for non-contention based transmission on the random access channel of the target base station. *See* Claim 17.

Claim 30	Accused Products
The mobile station of claim 6, wherein the transmitter is further configured to transmit, to the target base station using the random access channel of the target base station, a random access identifier code randomly selected, by the mobile station, from the first subset of random access identifier codes.	As evidenced above, the hardware/software configured to transmit signals when communicating using LTE is further configured to transmit, to the target base station using the random access channel of the target base station, a random access identifier code randomly selected from the first subset of random access identifier codes. *See* Claim 18.

Claim 31	Accused Products
The mobile station of claim 6, wherein the first subset of random access identifier codes is a range of random access identifier codes.	As evidenced above, the first subset of random access identifier codes is a range of random access identifier codes. *See* Claim 19.

Claim 32	Accused Products
The mobile station of claim 6, wherein the first subset of random access identifier codes selectable by the mobile station for contention based transmission on a random access channel of the target base station includes a plurality of groups of random access identifier codes.	As evidenced above, the first subset of random access identifier codes selectable by the mobile station for contention based transmission on a random access channel of the target base station includes a plurality of groups of random access identifier codes. *See* Claim 20.

Claim 33	Accused Products
The mobile station of claim 32, wherein the plurality of groups of random access identifier codes are distinguished by usage type.	As evidenced above, the plurality of groups of random access identifier codes are distinguished by usage type. *See* Claim 21.

Claim 34	Accused Products
The mobile station of claim 33, wherein two of the usage types are associated with different size bandwidth requests.	As evidenced above, two of the usage types are associated with different size bandwidth requests. *See* Claim 22.

Claim 36	Accused Products

The mobile station of claim 6, wherein a total number of random access identifier codes associated with the serving base station is the same as a total number of random access identifier codes associated with the target base station.	As evidenced below, wherein a total number of random access identifier codes associated with the serving base station is the same as a total number of random access identifier codes associated with the target base station.
	
	– *RACH-ConfigCommon*
	
	The IE *RACH-ConfigCommon* is used to specify the generic random access parameters.
	
	***RACH-ConfigCommon* information element**
	
	`-- ASN1START`
	
	`RACH-ConfigCommon ::= SEQUENCE {`
	`preambleInfo SEQUENCE {`
	`numberOfRA-Preambles ENUMERATED {`
	`n4, n8, n12, n16 ,n20, n24, n28,`
	`n32, n36, n40, n44, n48, n52, n56,`
	`n60, n64},`
	
	[…]
	
	RACH-ConfigCommon field descriptions
	numberOfRA-Preambles
	Number of non-dedicated random access preambles in TS 36.321 [6]. Value is an integer. Value n4 corresponds to 4, n8 corresponds to 8 and so on.
	
	Source: TS 36.331, pp. 126-27
	
	9.1.2 Preamble Sequence Generation
	
	Each cell supports 64 different preamble sequences. The base station can distinguish mobiles that are transmitting on the same set of resource blocks, provided that their preamble sequences are different.
	
	…
	
	The base station then reserves some of the 64 preamble sequences for the non-contention-based random access procedure that we discuss next, and assigns them to individual mobiles by means of RRC signalling. The remainder are available for the contention-based procedure and are chosen at random by the mobile.
	
	Source: Introduction to LTE, p. 165

Claim 36	Accused Products

Claim 38	Accused Products
The mobile station of claim 6, wherein the receiver is further configured to receive, from the serving base station, an indication of a second subset of random access identifier codes randomly selectable by the mobile station for contention based transmission on a random access channel of the serving base station.	As evidenced above, the hardware/software configured to receive signals when communicating using LTE is further configured to receive, from the serving base station, an indication of a second subset of random access identifier codes randomly selectable by the mobile station for contention based transmission on a random access channel of the serving base station. *See* Claim 26.

Claim 39	Accused Products
The mobile station of claim 6, wherein [A] the processor is further configured to randomly select, based on not receiving an indication of an allocated random access identifier code for non-contention based transmission from the target base station, a random access identifier code from the first subset of random access identifier codes, and	As evidenced above, the one or more processors are configured to randomly select, based on not receiving an indication of an allocated random access identifier code for non-contention based transmission from the target base station, a random access identifier code from the first subset of random access identifier codes. *See* Claim 27, [A].

Claim 39	Accused Products
[B] the transmitter is further configured to transmit, to the target base station, the randomly selected random access identifier code using the random access channel of the target base station.	As evidenced above, the hardware/software configured to transmit signals when communicating using LTE is configured to transmit, to the target base station, the randomly selected random access identifier code using the random access channel of the target base station. *See* Claim 27, [B].

Claim 40	Accused Products
The mobile station of claim 6, wherein the transmitter is further configured to transmit, to the target base station, a medium access control (MAC) identifier using resources assigned by the target base station based on the transmitted allocated random access identifier code.	As evidenced above, the hardware/software configured to transmit signals when communicating using LTE is configured to transmit, to the target base station, a medium access control (MAC) identifier using resources assigned by the target base station based on the transmitted allocated random access identifier code. *See* Claim 28.